

# 뇌동맥류내 코일색전술 실패 후 수술을 통한 코일 제거 및 뇌동맥류 결찰\*

- 증례 보고 -

정성삼<sup>1,3</sup> · 이재환<sup>1,3</sup> · 이규창<sup>1,3</sup> · 허승곤<sup>1,3</sup> · 김동익<sup>2,3</sup>

## Surgical Removal of Coil and Clipping of Aneurysm after Failure of Intraaneurysmal Coil Embolization

- Case Report -

Sung Sam Jung, M.D.,<sup>1,3</sup> Jae Whan Lee, M.D.,<sup>1,3</sup> Kyu Chang Lee, M.D.,<sup>1,3</sup>  
Seung Kon Huh, M.D.,<sup>1,3</sup> Dong Ik Kim, M.D.<sup>2,3</sup>

Departments of Neurosurgery,<sup>1</sup> Diagnostic Radiology,<sup>2</sup> Brain Research Institute,<sup>3</sup>  
Yonsei University College of Medicine, Seoul, Korea

Despite modern advances in endovascular techniques, intraaneurysmal coil embolization may be associated with serious complications such as parent artery occlusion by thromboembolism and coil migration or incomplete treatment, which require surgery. We report 5 cases in which surgical interventions had been necessary following coil embolization with Guglielmi Detachable Coil, either due to incomplete aneurysm obliteration or acute complication of parent artery occlusion by coil migration and thromboembolism. Surgical intervention include removal of the coils and clipping of the aneurysm. Immediate recanalization of the occluded artery by use of intra-arterial thrombolytics and surgery is very important. The role of neurosurgical management in the care of the patients suffering from unsuccessful endovascular therapy of aneurysm is demonstrated.

**KEY WORDS** : Aneurysm · Endovascular therapy · Surgery.

서 론

가

Guglielmi Detachable Coil(GDC)

가

5

1996 3

2002 3

2002

poster

199

25  
 , A1 가  
 30 (guage) 2  
 (Urokinase)  
 A1 A2  
 , 가 2 30  
 3 5 2  
 5  
 ,  
 ,  
 ,  
 ,  
 ,  
 A1 A2

## 증 례

### 증 례 1 :

55  
 Fisher Group 3  
 5.8 × 2.6mm  
 가  
 가  
 ,  
 ,  
 ,  
 ,  
 ,  
 Hunt - Hess Grade 4 가  
 ,  
 가  
 2  
 ,  
 ( A1)  
 가  
 (tangling) A1 가  
 ,  
 A1 A2 A1  
 ,  
 A1 A2 가  
 (390 ) ,  
 ,  
 (somatosensory  
 evoked potential, SSEP)가 3

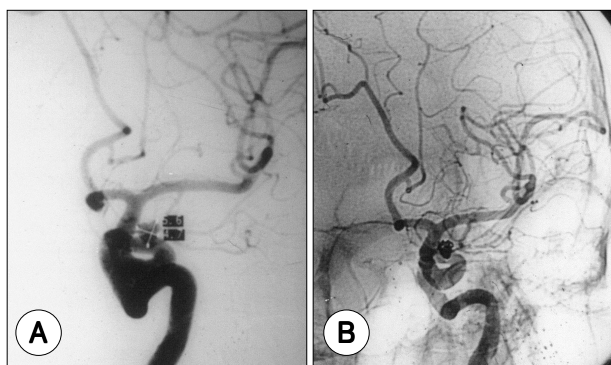
### 증 례 2 :

57  
 , 2  
 ,  
 ,  
 6.0 × 2.5mm  
 가  
 ,  
 ,  
 5  
 ,  
 가 ( A2) A2  
 (Reopro)  
 10mg (Heparin) 9000 20  
 ,  
 A2  
 ,  
 가  
 ,  
 activated clotting time(ACT) 200 300  
 , activated Partial Thromboplastin Time(aPTT)  
 40 50  
 ,  
 A2  
 가 A1 (384 )  
 ,  
 ,  
 SSEP가 70% 15

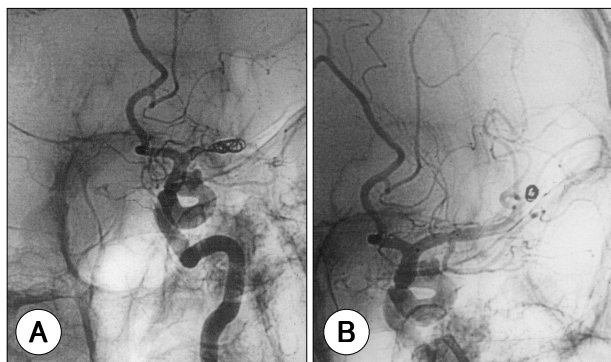
### 증례 3:

45

6.0 × 5.0mm 가 (Fig. 1A).



**Fig. 1.** A : Pretreatment anteroposterior oblique view of left carotid conventional angiography demonstrating a proximal internal carotid aneurysm, which projects superiorly. B : Immediate post-intraaneurysmal coil embolization. Oblique view of left carotid angiography demonstrating complete occlusion of the proximal internal carotid aneurysm.



**Fig. 2.** A : One and half hours after embolization. Oblique view of left carotid angiography demonstrating migration of the coil to the left M1 segment of the middle cerebral artery (MCA) and impaired left middle cerebral artery circulation. B : Anteroposterior oblique view of left carotid angiography after intravenous infusion of Reopro 6mg and attempt with microsnare for removal of coils demonstrating tangled coils further migrating to the left M2 segment inferior branch of the MCA.

2 GDC (Fig. 1B).

가

가 , 1 30

( M1) (Fig. 2A),  
6mg microsnare 가 M2  
가 M2 inferior branch  
(Fig. 2B).

M2 가  
(Fig. 3A).

M1

(Fig. 3B).

M2 가 M2  
30 2

M2

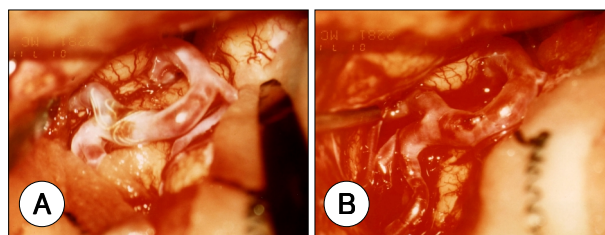
가 6 30

가  
가

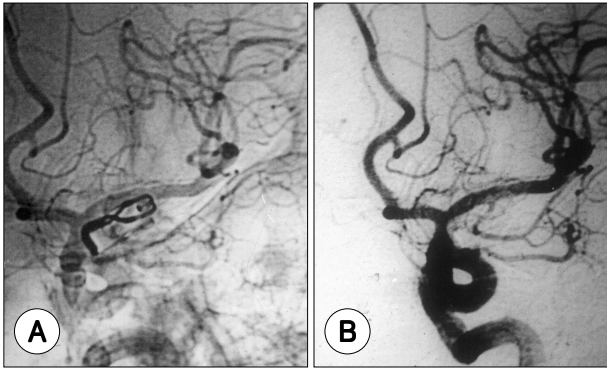
60mmHg  
(hypotensive anesthesia)

(Fig. 4A)

(Fig. 4B),



**Fig. 3.** A : Intraoperative photograph demonstrating occluded parent artery (the left M1 segment of the MCA partially and the M2 segment inferior branch of the MCA completely) after coil embolization. B : After arteriotomy of the M1 segment of the MCA, removal of coil, and closure.



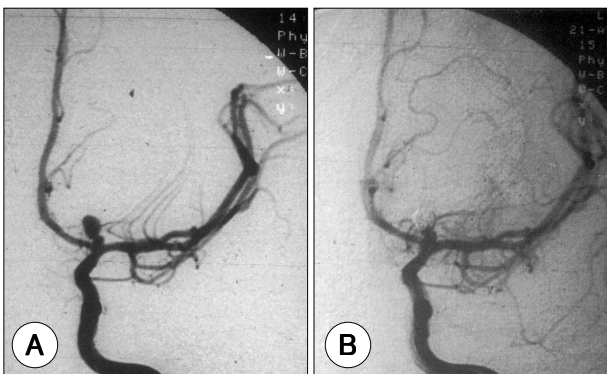
**Fig. 4.** Postoperative anteroposterior oblique view of left carotid angiography demonstrating A : Complete clipping of the aneurysmal neck and B : rescued left middle cerebral artery circulation.

증례 4 :

17

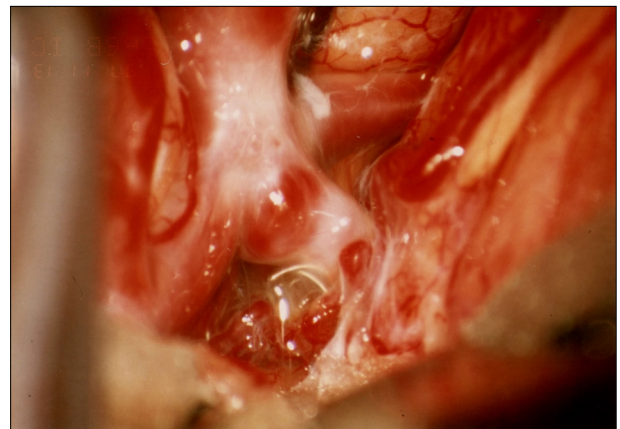
Fisher Group 4

7.0 × 3.0mm 가 (Fig. 5A).  
Hess Grade 5  
GDC 4 . Daughter sac



**Fig. 5.** A : Pretreatment anteroposterior oblique view of conventional left carotid angiography demonstrating a internal carotid bifurcation aneurysm, which projects superiorly and laterally. B : Post-intraaneurysmal coil embolization. Oblique view of left carotid angiography demonstrating incomplete coil packing of the aneurysm.

(7.0 × 3.0mm)가 mother sac (2.4 × 3.0mm)  
daughter sac 4  
(Fig. 5B). 20 가  
가 1 6  
daughter sac  
(Fig. 6). A1  
(250 )  
가  
SSEP



**Fig. 6.** Intraoperative photograph demonstrating the coil packing only in the daughter sac leaving the main aneurysm sac unprotected.

증례 5 :

47

Fisher Group 3

5.8 × 3.8mm 가  
3.8 × 2.4mm 가  
Hunt - Hess



Grade 3 . 가 , 가  
가  
3 14,15) . ,  
GDC 3  
1 GDC 가 ,  
6,11,12,15) .  
가  
가  
. Vinuela <sup>15)</sup>  
가 403 12  
37 (9.18%)  
, Guglielmi <sup>7)</sup> 42 3  
1  
(467 ) ( ),  
( Aymard <sup>1)</sup>  
SSEP ),  
가 40% 가  
고 찰  
GDC 1991  
100000 3)  
) 85% , 가 Fernandez Zubillaga  
. 1996 15% 가  
199  
, 6  
3  
, 2 snare wire catheter  
, 1  
가  
1<sup>13)</sup>  
가

*J Korean Neurosurg Soc/Volume 32/November, 2002*

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